

CLIPPEDIMAGE= JP405176060A

PAT-NO: JP405176060A

DOCUMENT-IDENTIFIER: JP 05176060 A

TITLE: VOICE STORAGE DEVICE

PUBN-DATE: July 13, 1993

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N/A

APPL-NO: JP03012041

APPL-DATE: February 1, 1991

INT-CL (IPC): H04M003/42

US-CL-CURRENT: 379/283

ABSTRACT:

PURPOSE: To improve the accuracy of DTMF detection by turning up the volume in reproducing the message if the DTMF reception level is high and turning down the volume if it is low according to the reception level of the DTMF signal transmitted by a subscriber by providing a DTMF reception level measurement section on a voice mail device.

CONSTITUTION: The system is provided with a line control unit 6 connected to the analog or digital telephone line and closing and opening the telephone line, a DTMF code detection section 5 detecting the code of the DTMF signal from the line control unit, a DTMF reception level

measurement unit 10
measuring the reception level of the DTMF signal, a voice
message storage unit
storing the voice message, a reproduction control unit
reproducing the voice
message recorded on the voice message storage section and
transmitting it
through the line control unit 6 to the telephone line, a
reproduction volume
control unit 4 controlling the output volume of the
reproduction control unit,
and a central control section 9 controlling the
reproduction control section
and the line control section 6 to integrate the voice
message reproduction
based on the control signal from the reproduction control
section.

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(11)特許出願公開番号

特開平5-176060

(43)公開日 平成5年(1993)7月13日

(51)Int.Cl.⁵

識別記号

庁内整理番号

FI

技術表示箇所

H O 4 M 3/42

J 9076-5K

審査請求 未請求 請求項の数1(全 4 頁)

(21)出願番号 特願平3-12041

(22)出願日 平成3年(1991)2月1日

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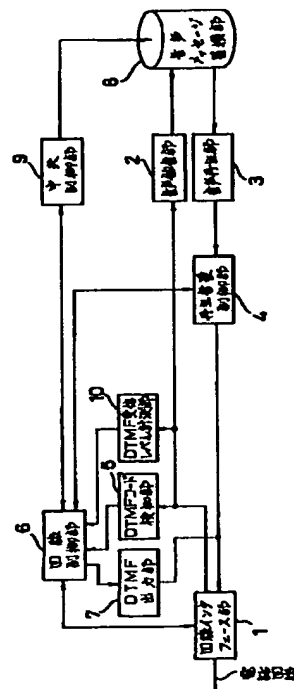
大阪府門真市大字門真1006番地 松下電器
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(54)【発明の名称】 音声蓄積装置

(57) 【要約】

【目的】 音声メール装置にDTMF受信レベル計測部を設けることにより、音声メール装置がメッセージ再生時の再生音量を加入者の送出したDTMF信号の受信レベルに応じて、DTMF受信レベルが高ければ再生音量を上げ、低ければ再生音量を下げることにより、DTMF検知精度を向上させる。

【構成】 アナログまたはディジタル電話回線に接続され、この電話回線の閉結、開放を行う回線制御部6と、この回線制御部からのDTMF信号のコードを検出するDTMFコード検知部5と、DTMF信号の受信レベルを計測するDTMF受信レベル計測部10と、音声メッセージを蓄積する音声メッセージ蓄積部と、この音声メッセージ蓄積部へ録音された音声メッセージを再生し、回線制御部6を通して電話回線へ送出する再生制御部と、この再生制御部の出力音量を制御する再生音量制御部4と、DTMFコード検知部5からの制御信号により音声メッセージ再生の統括制御を行うため、再生制御部・回線制御部6を制御する中央制御部9を設ける。



【特許請求の範囲】

【請求項1】 アナログまたはデジタル電話回線に接続され前記電話回線の閉結・開放を行う回線制御部と、前記回線制御部からのDTMF (Dual Tone Multi Frequency) 信号のコードを検知するDTMFコード検知部と、前記DTMF信号の受信レベルを計測するDTMF受信レベル計測部と、音声メッセージを蓄積する音声メッセージ蓄積部と、前記音声メッセージ蓄積部へ録音された音声メッセージを再生し、前記回線制御部を通して前記電話回線へ送出する再生制御部と、該再生制御部の出力音量を制御する再生音量制御部と、前記DTMFコード検知部からの制御信号により音声メッセージ再生の統括制御を行なうべく前記再生制御部、回線制御部を制御する中央制御部とを備え、前記DTMF受信レベル計測部の出力値が高いときに再生音量を上げ、出力値が低いときに再生音量を下げるように前記再生音量制御部を用いて前記再生制御部の出力音量を制御することにより、音声メッセージ再生時の再生音の受話側への回り込みによる前記DTMFコード検知部の誤検知を防ぐようにしたことを特徴とする音声蓄積装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、アナログまたはデジタル電話回線に接続され、電話回線を介して音声メッセージの録音・再生を行う音声蓄積装置に関するものである。

【0002】

【従来の技術】 従来よりアナログ電話回線を用いた音声蓄積装置として、例えば留守番電話装置があるが、近年、情報量の増大に伴い情報の蓄積手段としてその需要が急増してきた。さらに、オフィス内の電話を介したメッセージを蓄積して統一的に管理することにより、通信の効率化を進め、電話に付随する煩わしい作業を軽減する音声メール装置の開発も進んでおり、既に実用段階に入っている。

【0003】 以下に従来のアナログ回線に接続される音声メール装置について説明する。図2は従来の音声メール装置のブロック図であり、1はアナログ電話回線に接続され、回線の制御や入出力の分離を行う回線インタフェース部、2は回線インタフェース部1から出力されるアナログ電気信号をデジタル・データに変換し、さらに必要に応じて情報圧縮されたデジタル信号を出力する音声録音部、3は上記デジタル信号をアナログ信号に戻して回線インタフェース部1に出力する音声再生部、4は音声再生部3の出力を制御する再生音量制御部、5は電話回線を介して送られてくるDTMF信号のコードを検知するDTMFコード検知部、6は回線インタフェース部1と再生音量制御部4を制御して音声の入出力や回線を制御する回線制御部、7は回線制御部6からの命令に応じて回線インタフェース部1にDTMF信号を出

力するDTMF出力部、8は音声録音部2からの出力音声データの蓄積と音声再生部3へ入力する音声データの蓄積を行う音声メッセージ蓄積部、9は音声データの録音・再生を管理する中央制御部である。

【0004】 以上のように構成された音声メール装置について、以下その動作を簡単に説明する。まず、加入者が音声メール装置に電話をしてメッセージを再生する場合、回線インタフェース部1がリング音を検知して回線をオフフックし、回線制御部6に通知する。回線制御部6は中央制御部9に電話がかかってきたことを通知し、中央制御部9はこれに応じて音声メール装置であることを知らせる音声ガイダンスを音声メッセージ蓄積部8から出力させ、音声再生部3によってアナログ信号に戻し、回線インタフェース部1に入力し、電話回線に音声ガイダンス(例えば「こちらはメッセージ・センターです。ボックス番号を入力してください。」)を出力する。

【0005】 上記メッセージを聞いた加入者は、プッシュホンのキーにより相手のボックス番号(例えば「1312」)を入力すると、そのボックス番号はDTMF信号として回線インタフェース部1を介してDTMFコード検知部5に入力され、ボックス番号を表す数字列の符号に変換されて中央制御部9に送られる。中央制御部9は回線制御部6からボックス番号を表す数字列の符号を受け取ると、上記ボックス番号に対応するメッセージを音声メッセージ蓄積部8から出力させ、音声再生部3によってアナログ信号に戻し、回線インタフェース部1に入力して、電話回線にメッセージを出力する。

【0006】 この際、回線インタフェース部1の入出力の分離が完全でないために、上記メッセージが回線インタフェース部1を介してDTMFコード検知部5へ回り込む。このとき、上記メッセージにDTMF信号と類似した周波数成分が含まれていればDTMFコード検知部5は誤動作することがある。この回り込みによるDTMFコード検知部5の誤動作を防ぐため、音声再生部3が音声を出している際に、DTMFコード検知部5から検知出力が回線制御部6へ予め設定されている時間入力されると、回線制御部6は再生音量制御部4に命じて音声再生部3からの出力を切断し、DTMFコード検知部5への上記メッセージの回り込みによる影響をなくす。回線制御部6は、切断後、DTMFコード検知部5からの検知出力が継続していれば加入者の発信したDTMF信号と判断して、数字に変換して中央制御部9に出力し、DTMF検知出力の消失後、再生音量制御部4に命じて音声再生部3の出力を回線インタフェース部1へ入力させ、再生音の回線への送出を再開する。

【0007】 一方、切断後、DTMF検知部5からの検知出力が消失すれば、回線制御部6は再生音声の回り込みによる誤検知と判断し、再生音量制御部4に命じて音声再生部3の出力を回線インタフェース部1へ再入力さ

せる。加入者はメッセージを聞き終えると、終了を通知するキーを押す。DTMFコード検知部5がこれを検知して回線制御部6に通知し、回線制御部6は終了キーが押されたことを中央制御部9に伝える。中央制御部9は終了コマンドを受けて、音声メッセージ蓄積部8の読み出しを終了し、再生が終了する。

【0008】

【発明が解決しようとする課題】しかしながら、上記構成の音声メール装置は、メッセージ再生時に再生音の受話側への回り込みによるDTMF検知部の誤検知判断のために一時的に再生音声出力が完全に切断される。このため、再生音声出力が切断時点において不連続となり、パルス性の雑音が発生して通話品質が劣化するという問題を有していた。

【0009】本発明の目的は、従来の問題を解消し、音声メール装置にDTMF受信レベル計測部を設けることにより、音声メール装置がメッセージ再生時の再生音量を加入者の送出したDTMF信号の受信レベルに応じて、DTMF受信レベルが高ければ再生音量を上げ、低ければ再生音量を下げることに、DTMF検知精度を向上させるようにした音声蓄積装置を提供することである。

【0010】

【課題を解決するための手段】本発明の音声蓄積装置は、アナログまたはデジタル電話回線に接続され、この電話回線の閉結・開放を行う回線制御部と、この回線制御部からのDTMF信号のコードを検出するDTMFコード検知部と、DTMF信号の受信レベルを計測するDTMF受信レベル計測部と、音声メッセージを蓄積する音声メッセージ蓄積部と、この音声メッセージ蓄積部へ録音された音声メッセージを再生し回線制御部を通して電話回線へ送信する再生制御部と、この再生制御部の出力音量を制御する再生音量制御部と、DTMFコード検出部からの制御信号により音声メッセージ再生の統括制御を行うべく再生制御部、回線制御部を制御する中央制御部を設けたものである。

【0011】

【作用】上記の構成によって、音声メール装置がメッセージ再生時の再生音量を加入者の送出したDTMF信号の受信レベルに応じて、DTMF信号受信レベルが高ければ再生音量を上げ、DTMF信号受信レベルが低ければ再生音量を下げることに、DTMF検知精度を向上させることができる。

【0012】

【実施例】以下本発明の一実施例について、図面を参照しながら説明する。図1は本発明の一実施例における音声メール装置の構成を示すブロック図である。図1において、1は回線インターフェース部、2は音声録音部、3は音声再生部、4は再生音量制御部、5はDTMFコード検知部、6は回線制御部、7はDTMF出力部、8

は音声メッセージ蓄積部、9は中央制御部であり、以上は従来例の音声メール装置と同じものである。従来例と異なるのは、回線インターフェース部1からのDTMF信号の受信レベルを計測するDTMF受信レベル計測部10を設けている点である。

【0013】以上のように構成された音声メール装置について、以下その動作について説明する。加入者が音声メール装置に電話をしてメッセージを再生する場合、従来例と同様にして回線インターフェース部1が回線をオフフックし、音声メール装置であることを知らせる音声ガイダンスが出力される。加入者がボックス番号を入力すると、ボックス番号はDTMFコード検知部5により数字列に変換され中央制御部9へ送られ、中央制御部9により指定された音声メッセージが再生され、回線インターフェース部1を介して加入者に送出される。一方、上記ボックス番号を表すDTMF信号はDTMF受信レベル計測部10へ送られ、DTMF信号の受信レベルが中央制御部9へ送らる。この際、音声再生中であれば、上記DTMF受信レベルに再生音の回り込みによる影響が含まれていると判断し、中央制御部9は上記DTMF受信レベルを破棄する。上記DTMF受信レベルが低ければ音声再生部3からの回り込みの影響でDTMF誤検知の頻度が多くなるので、中央制御部9は上記DTMF受信レベルが低ければ回線制御部6を介して再生音量制御部4に命じて再生音量を小さくし、逆に、上記DTMF受信レベルが高ければ再生音量を大きくする。これにより、DTMFコード検知部5への再生音の回り込みによる影響を小さくでき検知精度を向上できる。さらに、上記加入者の聴覚上の音量低下感、聴覚が対数で作用するため少ない。また、音声再生中にDTMFコード検知部5から検知出力があれば、従来例と同様にして誤検知判断を行う。加入者は聞き終えると終了を通知するキーを押す。DTMFコード検知部5がこれを検知して回線制御部6に通知し、回線制御部6は終了キーが押されたことを中央制御部9に伝える。中央制御部9は終了コマンドを受けて、音声メッセージ蓄積部8の読み出しを終了し、再生が終了する。

【0014】

【発明の効果】本発明によれば、従来の音声メール装置にDTMF受信レベル計測部を設けることにより、音声メール装置がメッセージ再生時の再生音量を加入者の送出したDTMF信号の受信レベルに応じて、DTMF受信レベルが高ければ再生音量を上げ、DTMF受信レベルが低ければ再生音量を下げることに、DTMF検知精度を向上させることができ、しかも誤検知判断の頻度が少なくなるため誤検知判断時の送話雑音発生頻度を少なくすることができるという効果を奏するものであり、実用上有効なるものである。

【図面の簡単な説明】

【図1】本発明の一実施例における音声メール装置のブ

5

6

ロック図である。

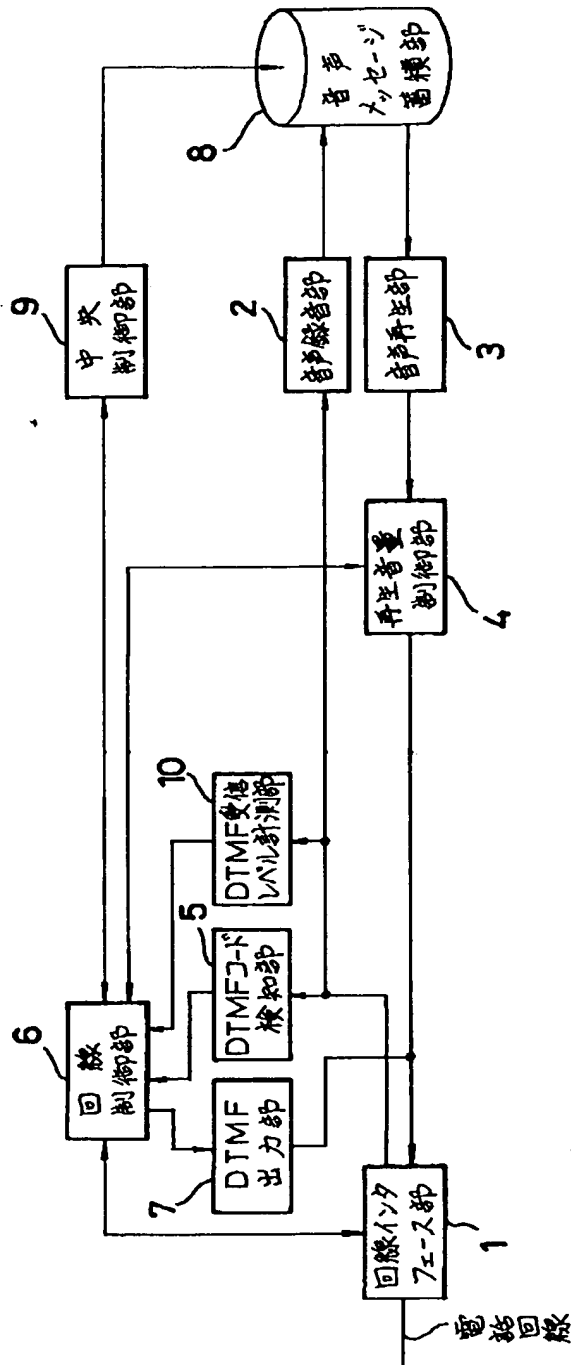
【図2】従来例の音声メール装置のブロック図である。

【符号の説明】

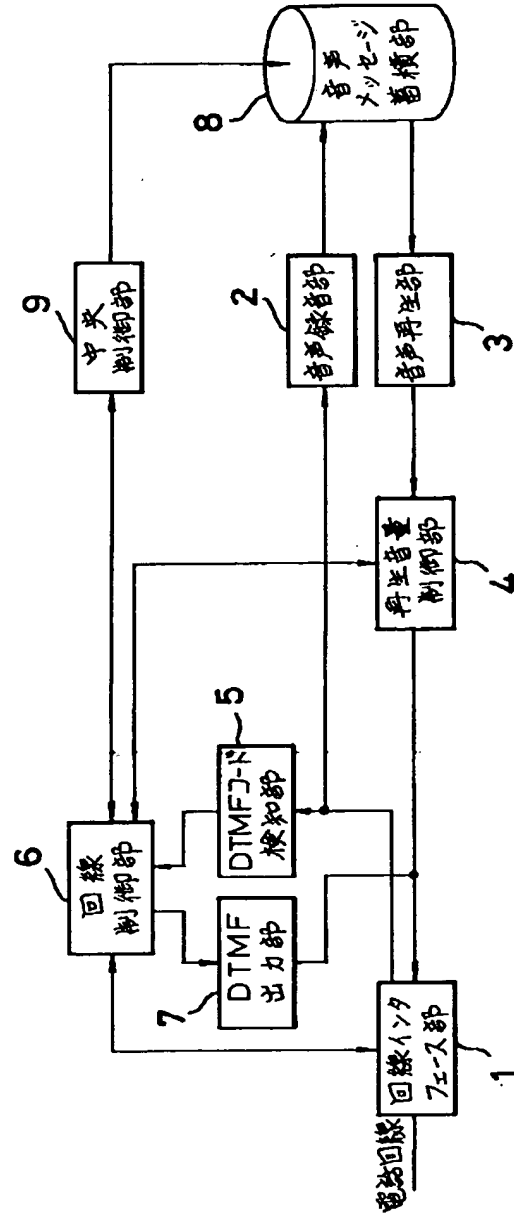
1…回線インタフェース部、 2…音声録音部、 3…

音声再生部、 4…再生音量制御部、 5…DTMFコード検知部、 6…回線制御部、 7…DTMF出力部、 8…音声メッセージ蓄積部、 9…中央制御部、 10…DTMF受信レベル計測部。

【図1】



【図2】



PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-176060

(43)Date of publication of application : 13.07.1993

(51)Int.Cl.

H04M 3/42

(21)Application number : 03-012041

(71)Applicant :

MATSUSHITA ELECTRIC IND CO LTD

(22)Date of filing : 01.02.1991

(72)Inventor :

SEGUCHI YOSHIAKI

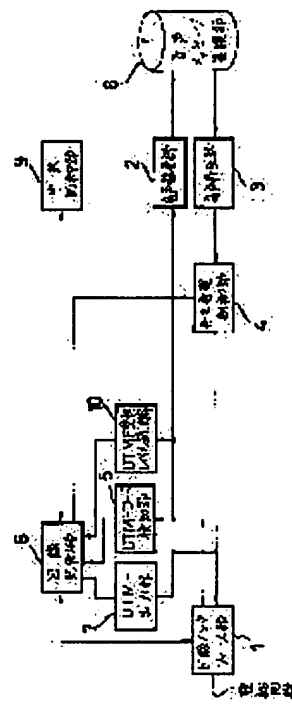
SAGARA RYOJI

(54) VOICE STORAGE DEVICE

(57)Abstract:

PURPOSE: To improve the accuracy of DTMF detection by turning up the volume in reproducing the message if the DTMF reception level is high and turning down the volume if it is low according to the reception level of the DTMF signal transmitted by a subscriber by providing a DTMF reception level measurement section on a voice mail device.

CONSTITUTION: The system is provided with a line control unit 6 connected to the analog or digital telephone line and closing and opening the telephone line, a DTMF code detection section 5 detecting the code of the DTMF signal from the line control unit, a DTMF reception level measurement unit 10 measuring the reception level of the DTMF signal, a voice message storage unit storing the voice message, a reproduction control unit reproducing the voice message recorded on the voice message storage section and transmitting it through the line control unit 6 to the telephone line, a reproduction volume control unit 4 controlling the output volume of the reproduction control unit, and a central control section 9 controlling the reproduction control section and the line control section 6 to integrate the voice message reproduction based on the control signal from the reproduction control section.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The voice-storage equipment carry out [having made the incorrect detection of the aforementioned DTME code detection section by the wraparound by the side of the receiver of the reproduction sound at the time of voice message reproduction protect by having the following, raising reproduction volume, when the output value of the aforementioned DTME receiving level measurement section is high, and controlling the output volume of the aforementioned reproduction control section using the aforementioned reproduction volume control section so that an output value lowers reproduction volume at the time of a low, and] as the feature. The line control section which is connected to an analog or a digital telephone circuit, and performs closing and opening of the aforementioned telephone line. The DTME code detection section which detects the code of the DTME (Dual Tone Multi Frequency) signal from the aforementioned line control section. The DTME receiving level measurement section which measures the receiving level of the aforementioned Dial Tone Multi Frequency. The voice message accumulation section which accumulates a voice message, the reproduction control section which reproduces the voice message recorded to the aforementioned voice message accumulation section, and sends out to the aforementioned telephone line through the aforementioned line-control section, the reproduction volume control section which controls the output volume of this reproduction control section, the BE ***** reproduction control section which perform in generalization control of voice message reproduction by the control signal from the aforementioned DTME code detection section, the CC section control the line-control section.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] It connects with an analog or a digital telephone circuit, and this invention relates to the voice storage equipment which performs recording and reproduction of a voice message through the telephone line.

[0002]

[Description of the Prior Art] Although there is an automatic answering telephone set as voice storage equipment using the analog telephone line from before, the need has increased rapidly as an informational accumulation means with increase of amount of information in recent years. Furthermore, by accumulating the message through the telephone in office and managing in integration, communicative increase in efficiency is advanced, development of the voice mail equipment which mitigates the troublesome work which accompanies a telephone is also progressing, and it already goes into the practical use stage.

[0003] The voice mail equipment connected to below at the conventional analog network is explained. Drawing 2 is the block diagram of conventional voice mail equipment, and 1 is connected to an analog telephone line. The circuit interface section which performs control of a circuit and separation of I/O, and 2 change into digital data the analog electrical signal outputted from the circuit interface section 1. The voice recording section which outputs the digital signal by which the information compression was furthermore carried out if needed, The voice reproduction section which 3 returns the above-mentioned data barrel signal to an analog signal, and is outputted to the circuit interface section 1, The reproduction volume control section by which 4 controls the output of the voice reproduction section 3, the DTME code detection section which detects the code of a Dial Tone Multi Frequency in which 5 is sent through the telephone line, The line control section which 6 controls the circuit interface section 1 and the reproduction volume control section 4, and controls audio I/O and an audio circuit, The DTME output section in which 7 outputs a Dial Tone Multi Frequency to the circuit interface section 1 according to the instruction from the line control section 6, The voice message accumulation section which accumulates voice data which inputs 8 into accumulation of the output voice data from the voice recording section 2 and the voice reproduction section 3, and 9 are the CC sections which manage the recording and reproduction of voice data.

[0004] About the voice mail equipment constituted as mentioned above, the operation is explained briefly below. First, when a subscriber telephones voice mail equipment and reproduces a message, the circuit interface section 1 detects ring sound, carries out off-hook [of the circuit], and notifies to the line control section 6. notifying that the line control section 6 has required the telephone for the CC section 9, the CC section 9 outputs the voice guidance which tells that it is voice mail equipment according to this from the voice message accumulation section 8 -- making -- the voice reproduction section 3 -- an analog signal -- returning -- the circuit interface section 1 -- inputting -- the telephone line -- voice guidance (for example, "-- this is a message pin center,large) Please input a box number. " is outputted.

[0005] If the subscriber who heard the above-mentioned message inputs a partner's box number (for example, "1312") by the key of a push-button phone, the box number will be inputted into the DTME code detection section 5 through the circuit interface section 1 as a Dial Tone Multi Frequency, will be changed into the sign of the digit string showing a box number, and will be sent to the CC section 9. If the sign of the digit string showing a box number is received from the line control section 6, the CC section 9 makes the message corresponding to the above-mentioned box number output from the voice message accumulation section 8, by the voice reproduction section 3, it will be returned to an analog signal, will be inputted into the circuit interface section 1, and will output a message to the telephone line.

[0006] Under the present circumstances, since separation of I/O of the circuit interface section 1 is not perfect, the above-mentioned message turns to the DTME code detection section 5 through the circuit interface section 1. At this time, if the Dial Tone Multi Frequency and the similar frequency component are contained in the above-mentioned message, the DTME code detection section 5 may malfunction. In order to prevent the malfunction of the DTME code detection section 5 by this wraparound, when the voice reproduction section 3 is outputting voice, the influence by which the detection output is beforehand set to the line-control section 6 from the DTME code detection section 5 according if a time input is carried out, will order the reproduction volume control section 4 to perform the line control section 6, and it will cut the output from the voice reproduction section 3, and] to the wraparound of the above-mentioned message to the DTME code detection section 5 is After cutting, the line control section 6 will judge it as the Dial Tone Multi Frequency which the subscriber sent, if the detection output from the DTME code detection section 5 is continuing, change into a number and output to the CC section 9, and order the reproduction volume control section 4, the output of the voice reproduction section 3 is made to input into the circuit interface section 1 after disappearance of a DTME detection output, and sending out in the circuit of reproduction sound is resumed.

[0007] On the other hand, if the detection output from the DTME detection section 5 disappears, the line control section 6 will judge it as the incorrect detection by the wraparound of reproduction voice, and the reproduction volume control section 4 will be ordered to perform it, and it will make the output of the voice reproduction section 3 reinput to the circuit interface section 1 after cutting. The key which will notify an end if a subscriber finishes hearing a message is pushed, and the DTME code detection section 5 detects this, it notifies to the line control section 6, and the line control section 6 tells that the end key was pushed to the CC section 9. In response to a quit command, the CC section 9 ends read-out of the voice message accumulation section 8, and reproduction ends it.

[0008]

[Problem(s) to be Solved by the Invention] However, a reproduction voice output is cut completely temporarily [the voice mail equipment of the above-mentioned composition / because of incorrect detection judgment of the DTME detection section by the wraparound by the side of the receiver of reproduction sound] at the time of message reproduction. For this reason, the reproduction voice output became discontinuous at the cutting time, and it had the problem that the noise of pulse nature occurred and a speech quality deteriorated.

[0009] Voice-mail equipment is offering the voice storage equipment it was made raise DTME detection precision by raising reproduction volume according to the receiving level of the Dial Tone Multi Frequency to which the subscriber sent out the reproduction volume at the time of message reproduction, if DTME receiving level is high, and lowering reproduction volume, if low by the purpose of this invention solving the conventional problem and preparing the DTME receiving level measurement section in voice mail equipment.

[0010]

[Means for Solving the Problem] The line control section which the voice storage equipment of this invention is connected to an analog or a digital telephone circuit, and performs closing and opening of this telephone line, The DTME code detection section which detects the code of the Dial Tone Multi Frequency from this line control section, The DTME receiving level measurement section which measures the receiving level of a Dial Tone Multi Frequency, The voice message accumulation section which accumulates a voice message, and the reproduction control section which reproduces the voice message recorded to this voice message accumulation section, and transmits to the telephone line through the line control section, The reproduction volume control section which controls the output volume of this reproduction control section, and the CC section which controls a reproduction control section and the line control section for the control signal from the DTME code detecting element to perform generalization control of voice message reproduction are prepared.

[0011]

[Function] By the above-mentioned composition, DTME detection precision can be raised according to the receiving level of the Dial Tone Multi Frequency to which the subscriber sent [voice mail equipment] out the reproduction volume at the time of message reproduction by raising reproduction volume, if Dial Tone Multi Frequency receiving level is high, and lowering reproduction volume, if Dial Tone Multi Frequency receiving level is low.

[0012]

[Example] One example of this invention is explained below, referring to a drawing. Drawing 1 is the block diagram showing the composition of the voice mail equipment in one example of this invention. In drawing 1, for the DTME code detection section and 6, as for the DTME output section and 8, the line control section and 7 are [the voice reproduction section and 4 / a reproduction volume control section and 5 / the voice message accumulation section and 9] the CC sections, and, as for the above, the circuit interface section and 2 of the conventional example are [1 / the voice recording section and 3] the same as that of voice mail equipment. Differing from the conventional example is the point of having formed the DTME receiving level measurement section 10 which measures the receiving level of the Dial Tone Multi Frequency from the circuit interface section 1.

[0013] About the voice mail equipment constituted as mentioned above, the operation is explained below. When a subscriber telephones voice mail equipment and reproduces a message, like the conventional example, the circuit interface section 1 carries out off-hook [of the circuit], and the voice guidance which tells that it is voice mail equipment is outputted. If a subscriber inputs a box number, it will be changed into a digit string by the DTME code detection section 5, and will be sent to the CC section 9, the voice message specified by the CC section 9 will be reproduced, and a box number will be sent out to a subscriber through the circuit interface section 1. On the other hand, for the Dial Tone Multi Frequency showing the above-mentioned box number, it is sent to the DTME receiving level measurement section 10, and the receiving level of a Dial Tone Multi Frequency is ***** to the CC section 9. Under the present circumstances, if it is [voice] under reproduction, it will judge that the influence by the wraparound of reproduction sound is included in the above-mentioned DTME receiving level, and the CC section 9 will cancel the above-mentioned DTME receiving level. Since the frequency of DTME incorrect detection will increase under the influence of the wraparound from the voice reproduction section 3 if the above-mentioned DTME receiving level is low, if the CC section 9 has the above-mentioned low DTME receiving level, the reproduction volume control section 4 will be ordered to perform it through the line control section 6, and it will make reproduction volume small, and if the above-mentioned DTME receiving level is high, it will enlarge reproduction volume conversely. Thereby, influence by the wraparound of the reproduction sound to the DTME code detection section 5 can be made small, and detection precision can be improved. Furthermore, there are few feelings of a volume fall on the above-mentioned subscriber's acoustic sense, in order that an acoustic sense may act by the logarithm. Moreover, if a detection output is during voice reproduction from the DTME code detection section 5, an incorrect detection judgment will be made like the conventional example. If a subscriber finishes hearing it, he will push the key which notifies an end, and the DTME code detection section 5 detects this, it notifies to the line control section 6, and the line control section 6 tells that the end key was pushed to the CC section 9. In response to a quit command, the CC section 9 ends read-out of the voice message accumulation section 8, and reproduction ends it.

[0014]

[Effect of the Invention] According to this invention, by preparing the DTME receiving level measurement section in conventional voice mail equipment By raising reproduction volume, if DTME receiving level is high, and lowering reproduction volume according to the receiving level of the Dial Tone Multi Frequency to which the subscriber sent [voice mail equipment] out the reproduction volume at the time of message reproduction, if DTME receiving level is low DTME detection precision can be raised, since the frequency of incorrect detection judgment moreover decreases, the effect that the frequency of transmission noise generating at the time of incorrect detection judgment can be lessened is done so, and it is effective practically.

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TECHNICAL FIELD

[Industrial Application] It connects with an analog or a digital telephone circuit, and this invention relates to the voice storage equipment which performs recording and reproduction of a voice message through the telephone line.

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PRIOR ART

[Description of the Prior Art] Although there is an automatic answering telephone set as voice storage equipment using the analog telephone line from before, the need has increased rapidly as an informational accumulation means with increase of amount of information in recent years. Furthermore, by accumulating the message through the telephone in office and managing in integration, communicative increase in efficiency is advanced, development of the voice mail equipment which mitigates the troublesome work which accompanies a telephone is also progressing, and it already goes into the practical use stage.

[0003] The voice mail equipment connected to below at the conventional analog network is explained. Drawing 2 is the block diagram of conventional voice mail equipment, and 1 is connected to an analog telephone line. The circuit interface section which performs control of a circuit and separation of I/O, and 2 change into digital data the analog electrical signal outputted from the circuit interface section 1. The voice recording section which outputs the digital signal by which the information compression was furthermore carried out if needed, The voice reproduction section which 3 returns the above-mentioned data barrel signal to an analog signal, and is outputted to the circuit interface section 1, The reproduction volume control section by which 4 controls the output of the voice reproduction section 3, the DTME code detection section which detects the code of a Dial Tone Multi Frequency in which 5 is sent through the telephone line, The line control section which 6 controls the circuit interface section 1 and the reproduction volume control section 4, and controls audio I/O and an audio circuit, The DTME output section in which 7 outputs a Dial Tone Multi Frequency to the circuit interface section 1 according to the instruction from the line control section 6, The voice message accumulation section which accumulates voice data which inputs 8 into accumulation of the output voice data from the voice recording section 2 and the voice reproduction section 3, and 9 are the CC sections which manage the recording and reproduction of voice data.

[0004] About the voice mail equipment constituted as mentioned above, the operation is explained briefly below. First, when a subscriber telephones voice mail equipment and reproduces a message, the circuit interface section 1 detects ring sound, carries out off-hook [of the circuit], and notifies to the line control section 6. notifying that the line control section 6 has required the telephone for the CC section 9, the CC section 9 outputs the voice guidance which tells that it is voice mail equipment according to this from the voice message accumulation section 8 -- making -- the voice reproduction section 3 -- an analog signal -- returning -- the circuit interface section 1 -- inputting -- the telephone line -- voice guidance (for example, "-- this is a message pin center, large) Please input a box number. " is outputted.

[0005] If the subscriber who heard the above-mentioned message inputs a partner's box number (for example, "1312") by the key of a push-button phone, the box number will be inputted into the DTME code detection section 5 through the circuit interface section 1 as a Dial Tone Multi Frequency, will be changed into the sign of the digit string showing a box number, and will be sent to the CC section 9. If the sign of the digit string showing a box number is received from the line control section 6, the CC section 9 makes the message corresponding to the above-mentioned box number output from the voice message accumulation section 8, by the voice reproduction section 3, it will be returned to an analog signal, will be inputted into the circuit interface section 1, and will output a message to the telephone line.

[0006] Under the present circumstances, since separation of I/O of the circuit interface section 1 is not perfect, the above-mentioned message turns to the DTME code detection section 5 through the circuit interface section 1. At this time, if the Dial Tone Multi Frequency and the similar frequency component are contained in the above-mentioned message, the DTME code detection section 5 may malfunction. In order to prevent the malfunction of the DTME code detection section 5 by this wraparound, when the voice reproduction section 3 is outputting voice, the influence by which the detection output is beforehand set to the line-control section 6 from the DTME code detection section 5 according if a time input is carried out, will order the reproduction volume control section 4 to perform the line control section 6, and it will cut the output from the voice reproduction section 3, and] to the wraparound of the above-mentioned message to the DTME code detection section 5 is After cutting, the line control section 6 will judge it as the Dial Tone Multi Frequency which the subscriber sent, if the detection output from the DTME code detection section 5 is continuing, change into a number and output to the CC section 9, and order the reproduction volume control section 4, the output of the voice reproduction section 3 is made to input into the circuit interface section 1 after disappearance of a DTME detection output, and sending out in the circuit of reproduction sound is resumed.

[0007] On the other hand, if the detection output from the DTME detection section 5 disappears, the line control section 6 will judge it as the incorrect detection by the wraparound of reproduction voice, and the reproduction volume control section 4 will be ordered to perform it, and it will make the output of the voice reproduction section 3 reinput to the circuit interface section 1 after cutting. The key which will notify an end if a subscriber finishes hearing a message is pushed, and the DTME code detection section 5 detects this, it notifies to the line control section 6, and the line control section 6 tells that the end key was pushed to the CC section 9. In response to a quit command, the CC section 9 ends read-out of the voice message accumulation section 8, and reproduction ends it.

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EFFECT OF THE INVENTION

[Effect of the Invention] In this invention, the DTME receiving level measurement section is prepared in conventional voice mail equipment. Therefore, voice mail equipment responds to the receiving level of the Dial Tone Multi Frequency to which the subscriber sent out the reproduction volume at the time of message reproduction. By raising reproduction volume, if DTME receiving level is high, and lowering reproduction volume, if DTME receiving level is low DTME detection precision can be raised, since the frequency of incorrect detection judgment moreover decreases, the effect that the frequency of transmission noise generating at the time of incorrect detection judgment can be lessened is done so, and it is effective practically.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, a reproduction voice output is cut completely temporarily [the voice mail equipment of the above-mentioned composition / because of incorrect detection judgment of the DTME detection section by the wraparound by the side of the receiver of reproduction sound] at the time of message reproduction. For this reason, the reproduction voice output became discontinuous at the cutting time, and it had the problem that the noise of pulse nature occurred and a speech quality deteriorated.

[0009] Voice-mail equipment is offering the voice storage equipment it was made raise DTME detection precision by raising reproduction volume according to the receiving level of the Dial Tone Multi Frequency to which the subscriber sent out the reproduction volume at the time of message reproduction, if DTME receiving level is high, and lowering reproduction volume, if low by the purpose of this invention solving the conventional problem and preparing the DTME receiving level measurement section in voice mail equipment.

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MEANS

[Means for Solving the Problem] The line control section which the voice storage equipment of this invention is connected to an analog or a digital telephone circuit, and performs closing and opening of this telephone line, The DTME code detection section which detects the code of the Dial Tone Multi Frequency from this line control section, The DTME receiving level measurement section which measures the receiving level of a Dial Tone Multi Frequency, The voice message accumulation section which accumulates a voice message, and the reproduction control section which reproduces the voice message recorded to this voice message accumulation section, and transmits to the telephone line through the line control section, The reproduction volume control section which controls the output volume of this reproduction control section, and the CC section which controls a reproduction control section and the line control section for the control signal from the DTME code detecting element to perform generalization control of voice message reproduction are prepared.

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OPERATION

[Function] By the above-mentioned composition, DTME detection precision can be raised according to the receiving level of the Dial Tone Multi Frequency to which the subscriber sent [voice mail equipment] out the reproduction volume at the time of message reproduction by raising reproduction volume, if Dial Tone Multi Frequency receiving level is high, and lowering reproduction volume, if Dial Tone Multi Frequency receiving level is low.

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EXAMPLE

[Example] One example of this invention is explained below, referring to a drawing. Drawing 1 is the block diagram showing the composition of the voice mail equipment in one example of this invention. In drawing 1, for the DTME code detection section and 6, as for the DTME output section and 8, the line control section and 7 are [the voice reproduction section and 4 / a reproduction volume control section and 5 / the voice message accumulation section and 9] the CC sections, and, as for the above, the circuit interface section and 2 of the conventional example are [1 / the voice recording section and 3] the same as that of voice mail equipment. Differing from the conventional example is the point of having formed the DTME receiving level measurement section 10 which measures the receiving level of the Dial Tone Multi Frequency from the circuit interface section 1.

[0013] About the voice mail equipment constituted as mentioned above, the operation is explained below. When a subscriber telephones voice mail equipment and reproduces a message, like the conventional example, the circuit interface section 1 carries out off-hook [of the circuit], and the voice guidance which tells that it is voice mail equipment is outputted. If a subscriber inputs a box number, it will be changed into a digit string by the DTME code detection section 5, and will be sent to the CC section 9, the voice message specified by the CC section 9 will be reproduced, and a box number will be sent out to a subscriber through the circuit interface section 1. On the other hand, for the Dial Tone Multi Frequency showing the above-mentioned box number, it is sent to the DTME receiving level measurement section 10, and the receiving level of a Dial Tone Multi Frequency is ***** to the CC section 9. Under the present circumstances, if it is [voice] under reproduction, it will judge that the influence by the wraparound of reproduction sound is included in the above-mentioned DTME receiving level, and the CC section 9 will cancel the above-mentioned DTME receiving level. Since the frequency of DTME incorrect detection will increase under the influence of the wraparound from the voice reproduction section 3 if the above-mentioned DTME receiving level is low, if the CC section 9 has the above-mentioned low DTME receiving level, the reproduction volume control section 4 will be ordered to perform it through the line control section 6, and it will make reproduction volume small, and if the above-mentioned DTME receiving level is high, it will enlarge reproduction volume conversely. Thereby, influence by the wraparound of the reproduction sound to the DTME code detection section 5 can be made small, and detection precision can be improved. Furthermore, there are few feelings of a volume fall on the above-mentioned subscriber's acoustic sense, in order that an acoustic sense may act by the logarithm. Moreover, if a detection output is during voice reproduction from the DTME code detection section 5, an incorrect detection judgment will be made like the conventional example. If a subscriber finishes hearing it, he will push the key which notifies an end, and the DTME code detection section 5 detects this, it notifies to the line control section 6, and the line control section 6 tells that the end key was pushed to the CC section 9. In response to a quit command, the CC section 9 ends read-out of the voice message accumulation section 8, and reproduction ends it.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of the voice mail equipment in one example of this invention.

[Drawing 2] It is the block diagram of the voice mail equipment of the conventional example.

[Description of Notations]

1 -- Circuit interface section 2 -- Voice recording section 3 -- Voice reproduction section 4 -- Reproduction volume control section 5 -- DTME code detection section 6 -- Line control section 7 -- DTME output section 8 -- Voice message accumulation section 9 -- CC section 10 -- DTME receiving level measurement section.

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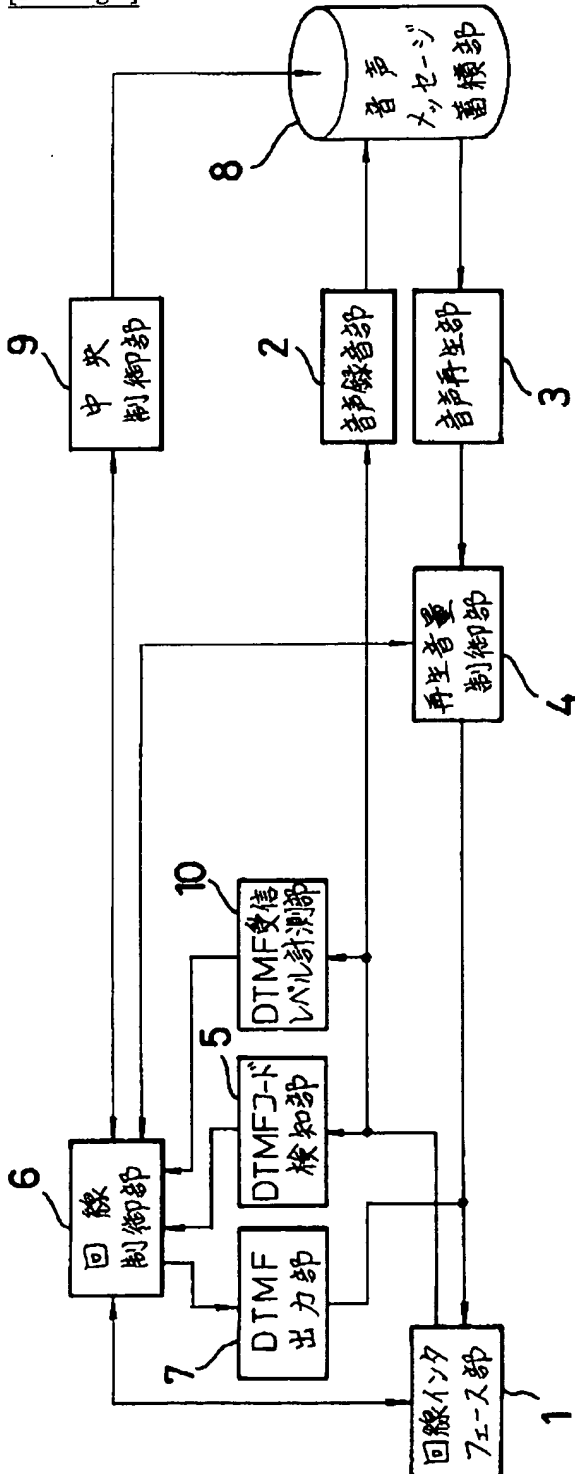
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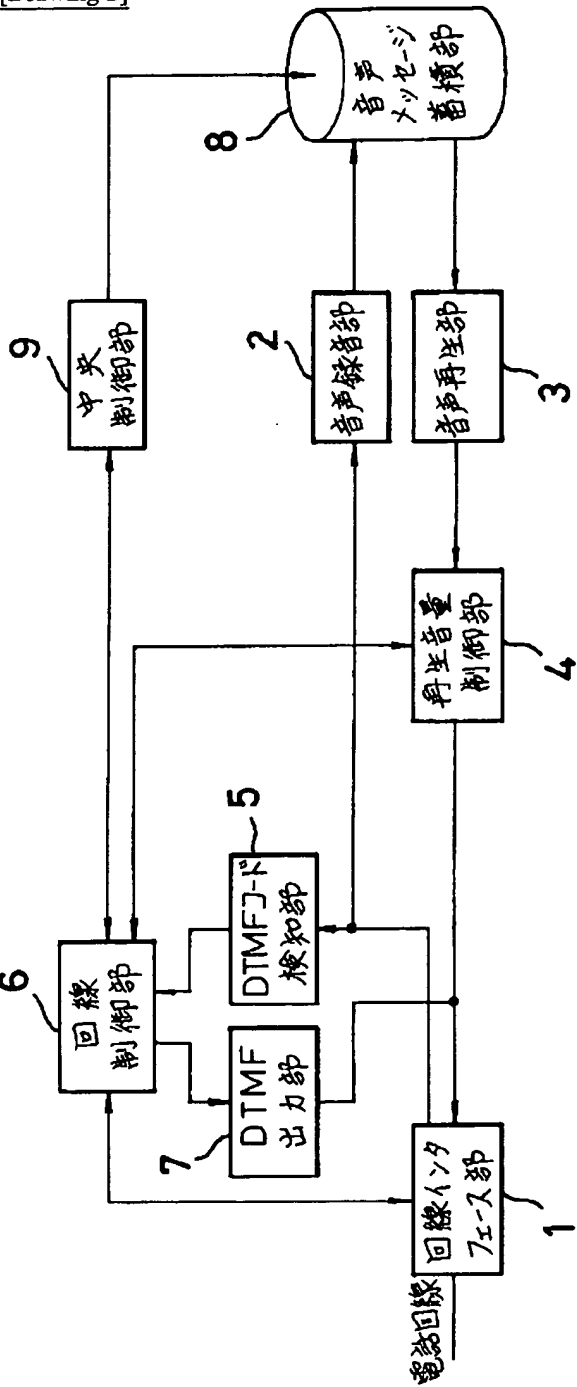
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DRAWINGS

[Drawing 1]



[Drawing 2]



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